YuHao Liu (Howard)

Urbana, IL 61801 ■ **Email:** liu104@illinois.edu ■ **Phone:** +1 (510) 206-6761

SUMMARY

I lead changes in organization. I coordinate the operations of Rogers research lab with hundred members and establish new protocols for lab users. I supervise an international consulting organization and establish new chapters in South Korea, New York and Taiwan. I lead my own research team in wireless powering and clinical applications of flexible biosensors. I specialize in wearable electronics, Si-based semiconductors, microfabrication, bio-instrumentation and RF power electronics. I actively represent the student body on campus in higher education administration and executive searching committees. My unique qualification includes:

- **Active senior researcher and manager**
- **Effective communication from science to business**
- **International consulting and stewardship**
- **Extensive teaching practices in engineering**
- **Mentoring, management and leadership**

EDUCATION

Ph.D. Candidate, Materials Science and Engineering, *University of Illinois at Urbana Champaign (2011-present)*

Thesis: **Skin-mounted Electronic Wearable Interfaces for Biomedical and Robotic Applications: Materials, Circuit and Signal Considerations** *(Expected graduating in May 2016)*

B.S., Material Science and Engineering, *University of California, Berkeley 2010*

PROFESSIONAL EXPERIENCE

University of Illinois at Urbana Champaign

Research Assistant, John A. Rogers's group, *Aug 2011 – present*

- Bio-inspired flexible biomedical sensors (wireless/ neural/ cardiac/ pressure sensors)
- Supervised 15 undergraduate researchers, 2 master students
- ***Technical Skills:*** Microelectronics fabrication, Thin film and Semiconductor Processing, Circuit design and Simulation, RF testing, Data analysis and processing, Graphical Design

General Manager, John A. Rogers's group, *Aug 2012 – present*

- Oversaw usage and safety of group laboratories and offices
- Established new centralized supplies, sources and communication system for the group
- Conducted interview, orientation of new group members

Search Committee, Chief Information Officer (CIO) *Aug 2013 – May 2014*

- Appointed by the Provost office as the only student representative
- Establish searching criteria, position description; recruit, review and interview prospective candidates

Innovation Immersion Program (Student-run International Consulting Organization, *http://innovationimmersion.net/)*

International Director (U.S., Sweden, Israel, Singapore, South Korea, Taiwan) *Dec 2013 – present*

- Establish new international chapters in South-Korea, Taiwan and Israel
- Supervise international recruitment and local chapter leadership teams
- Immersion Trip and Conference Planning

Senior Manager, South-Korea Industrial Gas Manufacturer *Jan 2015 - present*

- Supervise project manager on team operation
- Define the scope of projects and review team presentations
- Global graphene market assessment

Consultant, Israel Business Intelligence Software Company *Aug 2013 –Dec 2013*

- US market entry assessment and analysis for Cloud-based Enterprise Resource Planning software
- Worked in an international virtual team and deliver presentation to client at Israel in Winter 2013

Lawrence Berkeley National Laboratory

Beamline assistant, Advanced Light Source, Lawrence Berkeley Nat. Lab., CA *Aug 2010 – May 2011*

- ***Experiments & Data Analysis:*** Synchrotron Radiation experiments on Iron-Pnictide materials
- ***User support:*** Assisted visiting scholars at Beamline 7.0.1.1 for XAS, XES and RISX on instrumentation
- ***Maintenance:*** Repaired, maintained and constructed beamline end-station

University of California at Berkeley

Research assistant, Birgeneau's group, Lawrence Berkeley Lab, Berkeley, CA *Oct 2008 – May 2010*

- High T_c Iron-based superconductors on 122 and 1111 systems
- Synchrotron Radiation experiments at ALS, SSRL, APS, numerical and graphical analysis
- Set up a new X-ray diffraction lab; maintenance of cryogenic supermagnet, machinery work, system designs

TEACHING EXPERIENCE

University of Illinois at Urbana Champaign

Teaching Assistant, Materials in Today's World (MSE 101) *Aug 2013 – Dec 2013*

- Promote intrinsic motivation through novel materials demonstration
- Lecture "Biomaterials: Flexible Electronics", lead discussion sections

Teaching Assistant, Polymer Laboratory Class (Senior-level, MSE 452) *Aug 2011 – Dec 2013*

- Planned, organized and oversaw course content and progress
- Organized and lead weekly lab. sessions, provided guidance in class and grading

Coursework: EOL 585 College Teaching and Academic Careers *Jan 2014 – May 2014*

- Scholarly study of innovative pedagogy
- Classroom research project, syllabus reconstruction, teaching philosophy

MENTORING EXPERIENCE

University of Illinois at Urbana Champaign

Undergraduate research supervisor, John A. Rogers group *Aug 2012 - present*

- Manage and supervise a team of 2-5 undergraduate researchers
- Provide academic and career mentoring
- Outcome: 2 admitted Ph.D. program, 2 admitted Master program
- Number of students mentored: **11**

Senior Leadership Team, Innovation Immersion Program *Jan 2014 – present*

- International Director Position, oversee all international activities
- Outcome: expanded the program into Taiwan and Korea

AWARDS AND HONORS

European Ceramic Society's Travel Award, Toledo – Spain, June 2015 *(4 representative from US Universities)*

Best Poster Award, New York Academy of Science - Pepsi Day, December 2014 *(2 in 100 participants)*

ThinkChicago Entrepreneur Week, University Representative, 2014

Excellent Teacher ranked by their students, Fall 2013 *(the only TA in the department received this award)*

Arie and Ida Crown Memorial Study Abroad in Israel Scholarship, 2014

Materials Research Society Travel Award, Spring 2014 MRS, 2014

Racheff Teaching Fellow, University of Illinois at Urbana Champaign, 2013-2014 *(1 PhD student per academic year)*

ThinkChicago University Representative, 2013

John A. Rogers group citizenship award, 2012 - 2014

Hammer Fellow, University of Illinois at Urbana Champaign, Materials Science and Engineering Department, 2011

Tohoku University Summer Fellowship Program (TUSP), Sendai, Japan, 2010

Invited Delegates, International Student Energy Summit (ISES), Canada, Calgary, 2009

PROFESSIONAL SERVICES

Vice Chair, Campus Student Election Commission, *UIUC* (2014-2015)

Board Member, Organization Fund Advisory Board, *UIUC* (2014-2015)

Treasurer, America Society of Engineering Education, *UIUC Chapter (2014-2015)*

Student Representative, Chief Information Officer Searching Committee, *UIUC* (2013-2014)

Member, Campus Conversation on Undergraduate Education, *UIUC* (2013)

Department Representative, Provost and Graduate College Student Advisory Board, *UIUC* (2013-2014)

College of Engineering representative, University Librarian's Student Advisory Council, *UIUC*, (2012-2013)

Board member, Engineering Graduate Student Advisory Committee, *UIUC* (2011-2012)

Graphical Editor, California Engineer, *UC Berkeley, Berkeley, CA(2009-2010)*

President, Taiwanese Engineer of Berkeley, *UC Berkeley*, Berkeley, CA (2009-2010)

Web and poster design, Material Science & Engineering Association (MSEA), *UC Berkeley (09-10)*

PUBLICATIONS

1. **Yuhao Liu**, "Ultrahigh Temperature Ceramics: Diborides system*"*, *California Engineer*, Volume 89,Issue 2, 2010
2. B. Freelon, **Y.H. Liu**, J. Chen, C.R. Rotundu, P. Valdivia, S.D. Wilson, S. Gui, E.D. Bourret, W. Yang, J.H. Guo, R.J. Birgeneau, "Soft X-ray absorption spectroscopy investigations of 1111 and 122 iron pnictides", *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, Volume 649, Issue 1, 1 September 2011, Pages 197-199
3. B Freelon, **Yuhao Liu**, Y S Liu, C R Rotundu, S. D Wilson, J H Guo, Jenglung Chen, W Yang, C L Chang, P A Glans, P M Shirage, A. Iyo and R. J. Birgeneau, "Electronic Structure of PrFeAsO1-δ: An Investigation Using X-ray Absorption and Emission Spectroscopy", *J. Phys.: Conf. Ser.* **273** 012092
4. X. Huang, W. Yeo, **Y. Liu**, "Epidermal Differential Impedance Sensor for Conformal Skin Hydration Monitoring",

Biointerphases (2012) 7:52.

5. Huang X, Cheng H, Chen K, Zhang Y, Zhang Y, **Liu Y**, Zhu C, Ouyang SC, Kong GW, Yu C, Huang Y, Rogers J, " Epidermal Impedance Sensing Sheets for Precision Hydration Assessment and Spatial Mapping", *IEEE Trans Biomed Eng*. 2013 May 31
6. Gayoung Park, Hyun-Joong Chung, Kwanghee Kim, Seon Ah Lim, Jiyoung Kim, Yun-Soung Kim, **Yuhao Liu**, Woon-Hong Yeo, Rak-Hwan Kim, Stanley S. Kim, Jong-Seon Kim, Yei Hwan Jung, Tae-il Kim, Cassian Yee, John A. Rogers, and Kyung-Mi Lee, "Immunologic and tissue biocompatibility of flexible/stretchable electronics and optoelectronics", *Advanced Healthcare Materials* 2013
7. Lan Yin, Huanyu Cheng, Shimin Mao, Richard Haasch, **Yuhao Liu**, Xu Xie, Suk-Won Hwang, Hrshvrdhan Jain, Seung-Kyun Kang, Yewang Su, Rui Li, Yonggang Huang and John A. Rogers, "Dissolvable metals for transient electronics", *Advanced Functional Materials* 2013
8. Jae-Woong Jeong, Min Ku Kim, Huanyu Cheng, Woon-Hong Yeo, Xian Huang, **Yuhao Liu**, Yihui Zhang, Yonggang Huang, John A. Rogers, "Capacitive Epidermal Electronics for Electrically Safe, Long-Term Electrophysiological Measurements", *Advanced Healthcare Materials* 2013
9. Lizhi Xu, Sarah R. Gutbrod, Andrew P. Bonifas, Yewang Su, Matthew S. Sulkin, Nanshu Lu, Hyun-Joong Chung, Kyung-In Jang, Zhuangjian Liu, Ming Ying, Chi Lu, Richard C. Webb, Jong-Seon Kim, Jacob I. Laughner, Huanyu Cheng, **Yuhao Liu**, Abid Ameen, Jae-Woong Jeong, Yonggang Huang, Igor R. Efimov, John A. Rogers, "3D Multifunctional Integumentary Membranes for Spatiotemporal Measurement/Stimulation Across the Entire Epicardium", *Nature Communications, 5, 3329 (* 2013)
10. Xian Huang, **Yuhao Liu**, WooJung Shin, Jonathan Fan, Kaile Chen, Huanyu Cheng, Ching-Jui Lu, Gil-Woo Kong, Sami Hage-Ali, Yonggang Huang, and John A. Rogers, "Materials and Designs for Wireless Epidermal Sensors of Hydration and Strain", *Advanced Functional Materials* 2014
11. Xian Huang, **Yuhao Liu**, Kaile Chen, Woo-Jung Shin, Ching-Jui Lu, Gil-Woo Kong, Dwipayan Patnaik, Sang-Heon Lee, Jonathan Fajardo Cortes, and John A. Rogers, "Stretchable, Wireless Sensors and Functional Substrates for Epidermal Characterization of Sweat", *Small* 2014
12. Canan Dagdeviren , Yewang Su , Pauline Joe , Raissa Yona , **Yuhao Liu** , Yun-Soung Kim , YongAn Huang , Anoop Damadoran , Jing Xia , Lane Martin , Yonggang Huang, and John A. Rogers, "Conformable, Amplified Lead Zirconate Titanate Sensors with Enhanced Piezoelectric Response for Cutaneous Pressure Monitoring", *Nature Communications 2014*
13. Xian Huang, **Yuhao Liu**, Suk-Won Hwang, Seung-Kyun Kang, Dwipayan Patnaik, Jonathan Fajardo Cortes and John A. Rogers, "Biodegradable Materials for Multilayer Transient Printed Circuit Boards", *Advanced Materials 26, 7371-7377 (2014).*
14. X. Xie, S.H. Jin, M.A. Wahab, A.E. Islam, C. Zhang, F. Du, E. Seabron, T. Lu, S.N. Dunham, H.I. Cheong, Y.-C. Tu, Z. Guo, H.U. Chung, Y. Li, **Y. Liu**, J.-H. Lee, J. Song, Y. Huang, M.A. Alam, W.L. Wilson and J.A. Rogers, "Microwave Purification of Large-Area Horizontally Aligned Arrays of Single-Walled Carbon Nanotubes," *Nature Communications, 5, 5332 (2014).*
15. Sheng Xu, Zheng Yan, Kyungin Jang, Wen Huang,Haoran Fu, Jeonghyun Kim, Zijun Wei, Matthew Flavin, Joselle McCracken, Renhan Wang, Adina Badea, **YuHao Liu**, Dongqing Xiao, Guoyan Zhou, Jungwoo Lee, Ha Uk Chung, Huanyu Cheng, Wen Ren, Anthony Banks, Xiuling Li, Ungyu Paik, Ralph G. Nuzzo, Yonggang Huang, Yihui Zhang, John A. Rogers, "Deterministic assembly of functional micro/nanomaterials into complex, three-dimensional architectures by compressive buckling", *Science 347(6218), 154-159 (2015).*
16. Kyung-In Jang, Ha Uk Chung, Sheng Xu, Chi Hwan Lee, Haiwen Luan, Jaewoong Jeong, Huanyu Cheng,

Gwang-Tae Kim, Sang Youn Han, Jung Woo Lee, Jeonghyun Kim, Moongee Cho, Fuxing Miao, Yiyuan Yang, Han Na Jung, Matthew Flavin, **YuHao Liu**, Gil Woo Kong, Ki Jun Yu, Sang Il Rhee, Jeahoon Chung, Byunggik Kim, Myoung Hee Yun, Jin Young Kim, Young Min Song, Ungyu Paik, Yihui Zhang, Yonggang Huang, John A. Rogers, "Soft Network Composite Materials with Deterministic, Bio-Inspired Designs", *Nature Communication*, 2015

17. Chi Hwan Lee, Jae-Woong Jeong, **Yuhao Liu**, Yihui Zhang, Yan Shi, Seung-Kyun Kang, Jeonghyun Kim, Jae Soon Kim, Na Yeon Lee, Kyung-In Jang, Lan Yin, Min Ku Kim, Tony R. Banks, Ungyu Paik, Yonggang Huang, and John. A. Rogers, " Materials and Wireless Microfluidic Systems for Electronics Capable of Chemical Dissolution on Demand", *Advanced Materials 25, 1338-1343 (2015).*
18. L. Xu, S.R. Gutbrod, Y. Ma, A. Petrossians, **Y. Liu**, R.C. Webb, J.A. Fan, Z. Yang, R. Xu, J.J. Whalen, J.D. Weiland, Y. Huang, I.R. Efimov and J.A. Rogers, "Materials and Fractal Designs for 3D Multifunctional Integumentary Membranes with Capabilities in Cardiac Electrotherapy," *Advanced Materials 27, 1731-1737 (2015).*
19. Byron Freelon, **YuHao Liu**, Jung-Leng Chen, Luis Craco, Mukul Laad, Stefano Leoni, Jiaqi Chen, Li Tao, Minghu Fang, Roxana Flauca, Zahra Yamani, Yi-sheng Liu, Chinglin Chang, J-H Guo, Zahid Hussain, "Mott Kondo Insulating Behavior in Iron-Oxychalcogenides", *Bulletin of the American Physical Society 60 (2015).*
20. Jae-Woong Jeong, Jordan G. McCall, Gunchul Shin, Yihui Zhang, Ream Al-Hasani, Minku Kim, Shuo Li, Joo Yong Sim, Kyung-In Jang, Yan Shi, Daniel Y. Hong, **Yuhao Liu**, Gavin P. Schmitz, Li Xia, Zhubin He, Paul Gamble, Wilson Z. Ray, Yonggang Huang, Michael R. Bruchas and John A. Rogers, "Wireless Optofluidic Systems for Programmable In Vivo Pharmacology and Optogenetics", *Cell* 162, 3, 662-674 (2015)
21. **YuHao Liu**, "Electronic devices engineered to dissolve and disintegrate by thermal triggering", *MRS Bulletin* 40, Aug 2015
22. **YuHao Liu**, Xian Huang, Gil Woo Kong, Kyung-In Jang, Gwang-Tae Kim, Kaile Chen, Jialun Liu, Jonathan A. Fan, Dwipayan Patnaik, John A Rogers, "Modularized Epidermal RF Energy Harvester with Releasable Interconnect and Matching Components", *Nature Communication* (Submitted)
23. Baoxing Xu[†], Aadeel Akhtar[†], **Yuhao Liu**[†], Hang Chen, Woon-Hong Yeo, Sung II Park, Brandon Boyce, Hyunjin Kim, Jiwoo Yu, Hsin-Yen Lai, Sungyoung Jung, Yuhao Zhou, Jeonghyun Kim, Seongkyu Cho, Yonggang Huang, Timothy Bretl, John A. Rogers, "An Epidermal Stimulation and Sensing Platform for Sensorimotor Prosthetic Control, Management of Lower Back Exertion, and Electrical Muscle Activation", *Advanced Materials (In Press)*
24. **YuHao Liu**, Jamie Norton, Jungwoo Lee, Giovanni Salvatore, Lingqing Yang, Max Lai, Jianliang Zhang, Jaewoong Jeong, John A. Rogers, "Wearable Electronic Stethoscope and Sound Sensor for Cardiac Diagnosis and Human Machine Interface", *PNAS (In Preparation)*
25. **YuHao Liu**, Zhaoqian Xie, JeongHyun Kim, Jin Kim, Giovanni Salvatore, Lingqing Yang, Max Lai, Hank Liu, Yonggang Huang, John A. Rogers, "Near-field Communication Motion Sensing Tattoo for removal-prevention of Nasogastric tube", *Advanced HealthCare Materials (In preparation)*

PUBLIC PRESENTATIONS

*Invited Talk, "*Skin-Mounted Electronic Interfaces: From Materials to Circuit Considerations", IEEE NANOMED 2015

Presentation, "Epidermal RF Energy Harvester", Materials Research Society Spring 2015 Meeting

Poster, "Modularized Epidermal RF Energy Harvester with Releasable Interconnect and Matching Components", New York Academy of Science-Journey through Science Day, 2014

Presentation & Poster, "Skin-Mounted Electronic Interfaces: From Materials to Circuit Considerations", SONIC Annual Review, 2014

Invited Presentation & Poster, "Modularized Epidermal RF Energy Harvester with Releasable Interconnect and Matching Components", TECHCON 2014, Semiconductor Research Center

Presentation, "Epidermal Wireless Passive Skin Impedance Sensing", Materials Research Society Spring 2014 Meeting

Poster, "A Modularized Epidermal RF Energy Harvester with Releasable Interconnect and Matching Components", SONIC Annual Review, 2013

Presentation, "Epidermal Electronics: Skin Hydration Sensing", Soft Materials Seminar 2013

Presentation, "X-ray Absorption Spectroscopy Investigations of Iron Pnictides ", Advanced Light Source Annual User Meeting 2011

Poster, Advanced Photon Source Annual User Meeting, 2010

Poster, "X-ray Absorption Spectroscopy Investigations of Iron Pnictides ", The 16th Pan-American Synchrotron Radiation Instrumentation Conference, 2010

CONFERENCES

Materials Research Society Spring 2015 Meeting, *San Francisco*, 2015

SONIC Annual Review, *University of Illinois at Urbana Champaign*, 2014

TECHCON, *Semiconductor Research Center, Austin*, 2014

Materials Research Society Spring 2014 Meeting, *San Francisco, 2014*

SONIC Annual Review, *University of Illinois at Urbana Champaign*, 2013

Surface Analysis Workshop, *University of Illinois at Urbana Champaign,* 2013

Advanced Materials Characterization Workshop, *University of Illinois at Urbana Champaign,* 2013

LED 50th symposium, *University of Illinois at Urbana Champaign*, 2012

Advanced Light Source User Meeting, *Lawrence Berkeley National Lab*, 2011

The 16th Pan-American Synchrotron Radiation Instrumentation Conference, *Argonne National Lab*, 2010

CERTIFICATES

Fundamental Engineer/ Engineering –in-training (EIT), State of California	2009
Cleantech Regulation: Energy Law and Policy, UC Berkeley Law School	2010
Leadership i-Program (Insight, Ignite, Integrity, Imprint, Intersect)	2012
Graduate Teaching Certificate, University of Illinois	2013
Leadership Certificate, Leadership Center, University of Illinois at Urbana-Champaign (In progress)	2013
Business Management for Engineers (BME), University of Illinois	2013
NI Certified LabVIEW Associate Developer, National Instruments, License 100-314-255	2014

MULTIMEDIA

MRS Bulletin News, "Electronic devices engineered to dissolve and disintegrate by thermal triggering", Aug 2015

Interview, "Tatouage électronique : une révolution pour la médecine ?" , FutureMag, French

Interview, "Electrifying Endeavors", Big Ten Network LiveB1G

Picture, Alumni Magazine, Summer 2013, University of Illinois at Urbana Champaign

Interview, "Epidermal Electronics", Daily Illini issue March 13, University of Illinois at Urbana Champaign

SKILLS

Languages*:* Fluent in Mandarin and Cantonese, beginner in Japanese **Transportation***:* Automobile, Motorcycle

Computing*:* ANSI C/ C++, Pascal, HTML, Photoshop, Illustrator, Word, Excel, Powerpoint

Technical*:* Igor Pro, Origin Pro, Labview, Matlab, Solidwork, AutoCAD, GSAS for powder diffraction, digitization, LaTex, Orbital drawing, CorelDraw, ChemBio Office, IP Networking, PC Hardware

Laboratory*:* Micro-Nano-fabrication, cleanroom operation, Scanning electron microscope (SEM), Transmission electron microscope (TEM), XRD, Laue, Welding, Eectrical wiring, Machining, Data Analysis, Ultrahigh Vacuum Design, Gas system

EXPERENCE

Guest Scientists of LBNL Advanced Light Source, Stanford SSRL, Argonne APS